FACULTY OF
ENGINEERING &
THE BUILT ENVIRONMENT

CPD
CONTINUING PROFESSIONAL DEVELOPMENT

UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD
ENGINEERING & THE BUILT ENVIRONMENT

CoMSIRU

TRANSNET
freight rail

Design and Construction of Railway Bridges

In person in Cape Town, 24 – 26 March 2025

UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

Introduction

This workshop covers various practical aspects of bridge design, analysis and construction including conceptual design, live loading, and the design of structural systems and components.

The emphasis will be on highway, railway and pedestrian bridges in reinforced and prestressed concrete. In addition, principles of steel bridge design will be covered. The workshop will focus on application of engineering concepts and practical design approaches. A number of design examples (conceptual design and detailed structural design) for various common bridge types will be presented.

In the lectures, fundamental principles will be discussed, but the focus will rest on practical design examples and presentation of step-by-step approaches for the identification of various conceptual and structural design solutions. Delegates will be given practical “hands-on” information on how to apply the fundamental design concepts in various real-life situations.

Who should attend?

Engineers and & Technologists, Agency and Public Sector Asset Managers, Asset Maintenance Managers, Bridge and Infrastructure Inspection Consultants.

Course Content

1. **Conceptual design of bridges**
   - Design objective and design basis; Procedure of conceptual design; Load bearing systems and their using conditions (type selection); Pre-stressing of bridges
   - Worked examples of conceptual design: from site conditions to the selection of suitable bridge types; estimation of span lengths and cross-sectional dimensions, etc.
2. **Preliminary structural analysis of bridges**
   - Load models in Europe and South Africa; highway-, railway-, pedestrian-bridges
   - Worked examples: bridge loading; bending moments and shear forces; critical cross-sections, etc.
3. **Structural design**
   - Selection of cross-sectional dimensions; prestressing systems and tendon layout; prestress forces and prestress losses
4. **Construction technology**
   - Choice of suitable methods; practical considerations; cost comparisons

Course Outcomes

Engineers who attend the workshop should be able to:

- Perform a conceptual design for various bridge types
- Select appropriate load-bearing and support systems
- Calculate bridge loading based on relevant load models and national Codes
- Perform a preliminary structural analysis of concrete bridges
- Understand issues relating to the construction of concrete bridges and how these affect the design process

Course Presenters

Prof. Pilate Moyo (PrEng) is Professor of Structural Engineering and Director of the Concrete Materials and Structural Integrity Research Unit (CoMSIRU) in the Department of Civil Engineering at the University of Cape Town. His research and consultancy are on structural health monitoring, condition assessment, structural dynamics, vibration testing, and structural strengthening strategies for civil structures. His research is focused on developing structural assessment technologies integrating finite element modelling, full scale field testing, and advanced data analysis algorithms. He has published widely in these areas**.**

Mr Pheku Montwedi (PrEng) is a Director of Mmetlakitso Consulting (Pty) Ltd. He has experience in the structural design of bridges (prestressed, incrementally launched, reinforced) and harbour/waterfront structures. Pheku was the Transport Business Leader for the Southern African region at ARUP (Johannesburg office) and was responsible for bridge and harbour design. Before joining ARUP Pheku worked at Protekon (now Transnet Group Capital); a subsidiary of Transnet, doing in-house design. He has worked on several inspiring significant projects during his career, and his involvement in a number of these has required knowledge of relevant international design codes. He is a Registered Professional Engineer and a member of SAICE. He has worked for large international clients such as the World Bank and has travelled extensively in Africa on projects to the following countries: Botswana, Zimbabwe, Mozambique, Tanzania, Liberia, Guinea-Conakry, Namibia, and Ghana. He has also travelled overseas on business to Singapore, Malaysia, the United Kingdom, Hong Kong, the Netherlands, Ireland and to the United States of America.

Course Overview

Name	Design and Construction of Railway Bridges	
Duration	24 – 26 March 2025	
Venue	Graduate School of Business, Portswood Rd, V&A Waterfront, Cape Town	
CPD	3 CPD points, ECSA Validation No: UCTDCRB25	
Participants	Engineers and Technologists, Agency and Public Sector Asset Managers, Asset Maintenance Managers, Bridge and Infrastructure Inspection Consultants.	
Entry requirements	Minimum NQF7 qualification in Engineering, Built environment or relevant sector	
Fees	Standard delegate: R12 800.00	Full-time student: R6 400

Registration

Registration and Cancellation

- Register online
- Registration covers attendance of all sessions of the workshop, teas and lunches, and a set of notes.
- Registrations close one week before the start of the course. Confirmation of acceptance will be sent on receipt of a registration form.
- Cancellations must be received one week before the start of a course, or the full course fee will be charged.
- For more information on application and registration procedures, please visit our website.

Certificates and CPD Points

A digital certificate of attendance will be awarded to CPD participants. Participants need to attend 80% of the lectures to qualify for an attendance certificate. For further information on digital certificates please visit Digital Certificates at UCT

This course is registered with the Engineering Council of South Africa (ECSA) for the award of 3 CPD points. The ECSA course validation code is: UCTDCRB25

Contact details

For more information or details on CPD courses, visit our website or contact us.

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